Journal of Analytical Chemistry 2001 vol.56 N10, pages 963-970

Determination of residual pesticide in plant materials using planar cholinesterase sensors modified with nafion

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Abstract

Amperometric cholinesterase biosensors based on planar screen-printed carbon electrodes modified with Nafion were developed for determining residual pesticides exhibiting anticholinesterase activity in plant materials. When stored under dry conditions, biosensors retained their normal operation for six months. Simplified extraction methods were proposed to eliminate the effects of the matrix and organic solvents. The developed procedure provides the direct determination of down to 0.1 mg/kg pesticides in wheat, barley, sorghum, and rice grains without the removal of organic solvents.